

Chronic Kidney Disease : The Looming Threat

Brig AS Narula*

MJAFI 2008; 64 : 2-3

Key Words : Chronic kidney disease

Chronic kidney disease (CKD) is becoming a major global health problem. It increases patient mortality and morbidity and puts a major economic strain on the health care system. It is estimated that 1,00,000 new patients of end stage renal disease (ESRD) enter renal replacement programs annually in India [1]. In the absence of any registry in our country these figures were based on estimates from rest of the world, tertiary care centre data and collective experience of nephrologists [2]. In an initial survey conducted by Mani et al [3], in the rural population of Chennai from South India, the evidence of CKD short of renal failure was 0.7%. In a population based study from Bhopal in Central India, Modi et al [2] have reported the average crude and age adjusted incidence rates of stage 5 CKD (ESRD) as 151 and 232 per million population. In a community based study by Agarwal et al [4], from Delhi in Northern India the prevalence of earlier stages of CKD was reported to be 7852 per million population. There are no published studies from India on the prevalence of covert renal disease (stage 1 and 2). Data from United States suggests that for every patient with ESRD there are more than 200 patients with overt CKD in stage 3 and 4 and almost 5000 patients with covert renal disease (stage 1 and 2)[5]. The National Health and Nutrition Examination Survey (NHANES III) in a population based survey in USA estimated that 11% of the adult population may have some stage of CKD [6]. If these figures are applied to our country of one billion plus people, the sheer enormity of numbers would overwhelm our health care system.

In India there is a rising burden of chronic diseases like hypertension and diabetes. The increase in number of CKD patients can be partially attributed to the epidemic of chronic diseases and the aging population. India has the largest number of diabetics in the world with a prevalence of 3.8% in rural and 11.8% in urban adults. The prevalence of hypertension has been reported to range between 20-40% in urban adults and

12-17% among rural adults [7]. It is estimated that 25-40% of these patients are likely to develop CKD, with a significant percentage requiring renal replacement therapy. The health care system in our country is not designed to provide the required level of care for CKD at the primary or secondary level. In developing countries various health care programs have been devoted to communicable diseases, nutritional deficiencies, population control and recently to acquired immunodeficiency syndrome. For non communicable diseases like diabetes, hypertension and CKD the focus has been on developing advanced treatment facilities at the tertiary level [7]. The staggering costs incurred in the developing these centres of excellence needs to be recognized thus making it imperative to shift the approach from provision of renal replacement therapy to early detection and prevention of CKD. This approach may additionally reduce the morbidity and mortality of underlying conditions such as diabetes and hypertension, which is related directly to the presence of albuminuria or degree of renal function impairment. The HOORN study showed that renal impairment was directly associated with cardiovascular mortality in the general population [8].

The purpose of early diagnosis is detection of asymptomatic disease at a time when intervention has a reasonable potential of having a positive impact on outcome. Numerous studies have shown that interventions such as tight glycaemic control, good blood pressure control, correction of dyslipidaemia, reduction of proteinuria with angiotensin converting enzyme inhibitors and/or angiotensin receptor blockers can prevent kidney disease or delay its progression [9]. A preventive program is usually implemented if the disease has significant prevalence in the community and the cost of prevention is less than that of the disease treatment. Mani et al [3] demonstrated that a preventive program using a simple urine test and blood pressure recording

*Consultant (Medicine & Nephrology), Armed Forces Medical College, Pune 411040 and Editor-in-Chief. Email : narulaas@gmail.com

could be implemented within the Government's health budget. In their paper they appealed to the nephrology community at large to initiate these screening programs. The effort involved in the mass screening programs and the low yield were probably the deterrents for any health organization to heed the appeal for a beginning.

There are a number of populations that are considered to be at high risk for developing chronic kidney disease. The high risk individuals are those with hypertension, diabetes mellitus, cardiovascular disease and first degree relatives of patients with hypertension, diabetes mellitus or renal disease. Screening of these populations will maximize the yield and be able to benefit a large population of patients. The second approach to maximize detection of CKD is to screen for more number of urinary markers of kidney disease besides albuminuria. These include the presence of pus cells, red blood cells, and microalbuminuria. Serum creatinine and equations to estimate glomerular filtration rate could be included to increase the sensitivity of the screening programs.

The National Kidney Foundation Inc. USA, conducted the Kidney Early Evaluation Program (KEEP 2), in high risk population for CKD and found microalbuminuria in 29%, haematuria in 18%, pyuria in 13%, and reduced glomerular filtration rate in 16 % patients [9]. In the armed forces we have an estimate of the number of patients entering the renal replacement programs in various service hospitals, but going by the experience of the world, this would form only the tip of the iceberg. The exact magnitude of the burden of CKD needs to be established to implement strategies to retard the progression. A study was carried out under the aegis of the Director General Armed Forces India to determine the prevalence of CKD in population considered to be at high risk and availing the medical facilities at a tertiary care hospital. Haematuria and pyuria were present in 12% and 5.4% of the population and microalbuminuria was detected in 31.6% of study population. Microalbuminuria was associated with a longer duration of diabetes and hypertension and with poorer glycaemic

and blood pressure control. 65.5 % patients were in stage 2 and above of CKD (glomerular filtration rate < 60 ml/mt/1.73m² body surface area). This study showed the effectiveness of targeted screening in detecting patients with CKD at an early stage (unpublished data).

In the absence of any such screening program most of these patients would have been detected to have advanced stage of CKD when they become symptomatic. The only therapeutic options for these patients would be some form of renal replacement therapy, which is costly and not easily available. Hence it becomes imperative to institute a screening program at all levels to detect CKD at an early stage, institute specific therapies to retard the progression of renal disease and reduce the burden of ESRD in the long run.

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